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DOMINION DEPARTMENT OF AGRICULTURE
DAIRY AND COLD STORAGE BRANCH.

THE GRIMSBY PRE-COOLING AND EXPERIMENTAL
FRUIT STORAGE WAREHOUSE

COMMERCIAL PRE-COOLING AND STORAGE OF FRUIT
FOR THE SEASON OF 1915

OTTAWA
GOVERNMENT PRINTING BUREAU
1915

FOREWORD.

In anticipation of a large shipment of peaches and plums to the West during 1915, the pre-cooling facilities of the Grimsby Pre-cooling and Experimental Fruit Storage warehouse have been put in the best possible shape for commercial use as well as for scientific investigations. It is expected that shippers will avail themselves of the low rates for pre-cooling made possible by the establishment of this experimental plant. The aim is to carry on the commercial work at cost and the rates have been revised with that end in view. The rules and rates herein set forth supersede and cancel those in force during the season of 1914, and it is hoped that they will meet with the approval of all prospective shippers.

J. A. RUDDICK,

*Dairy and Cold Storage Commissioner,
Ottawa, Ont.*

EDWIN SMITH,

*Horticulturist in Charge,
Grimsby, Ont.*

THE GRIMSBY PRE-COOLING AND EXPERIMENTAL FRUIT STORAGE WAREHOUSE.

OBJECTS AIMED AT.

The Grimsby "Cold Storage" was erected in the spring of 1914 by the Dominion Department of Agriculture under the direction of Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, for the purpose of—

- (a) demonstrating the value of pre-cooling fruit for shipments to the Northwest and other distant markets;
- (b) determining the most desirable equipment and methods to be used in pre-cooling fruit in the Niagara District; and,
- (c) carrying on scientific experiments with fruit in cold storage.

The scientific work is undertaken for the most part separately from that which is purely commercial. The commercial work is intended to demonstrate the value of certain practices in the handling and shipment of fruit. As soon as records that are reliable and valuable are secured in the scientific division, they will at once be put into practice in the commercial work at Grimsby and will also be published for the general information of Canadian fruit growers.

During the season of 1914 the plant was thoroughly tried out, and though it was not used to its full capacity, owing to the short fruit crop, it saved a great deal of money to the growers near Grimsby. During the coming season the plant will be ready to operate at full capacity, so that all of the advantages found in pre-cooling fruit in other districts will be reaped by the fruit growers and shippers in the district.

METHODS OF HANDLING.

Exclusive of corridors, passageways and experimental space, there are 27,000 cubic feet of refrigerated space, sufficient to pre-cool forty-four tons of fruit per day, with auxiliary storage to assemble eight additional cars of fruit.

The fruit is loaded on specially designed trucks when brought from the orchard, run into the pre-cooling rooms and *cooled on the trucks* by a blast of cold air introduced through a perforated false floor. The air is cooled by being driven over coils containing brine held at 10 degrees F., the brine being chilled by the rapid melting of ice mixed with salt. During warm weather the plant uses between eight and eighteen tons of ice per day.

The fruit is cooled to 40 degrees F., after which it is ready to load in iced cars. The fruit is not exposed to warm air after once being cooled and remains in a cold condition until it arrives on the market.

Loading and shipping is done by trained men at the cold storage. For distant shipment the cars are provided with slatted floors and the fruit is securely braced, which goes a long way to insure its arrival in good condition.

ADVANTAGES.

The advantages of such a plant include—

- (a) the assembling of carloads of cherries, peaches, plums, or other tender fruits over two or three days and shipping by refrigerated freight while in good condition (\$250 per car may be saved in transportation charges to Winnipeg over express rates);

- (b) the checking of the ripening of fruit by prompt cooling, permitting shipment to more distant points and making the arrival at destination in sound condition more certain, thus reducing claims against loss through deterioration;
- (c) the holding of tender fruits for several days to suit the markets' demands;
- (d) avoiding gluts on the markets;
- (e) extending the markets for early apples and pears by several weeks; and,
- (f) reducing the loss from decay and over-ripeness in the storage of winter apples.

The Grimsby Cold Storage provides for the quick cooling of fruit after removal from the trees. *A few hours at this time means that several additional days may be taken to market the fruit.*

SCHEDULE OF RATES.

For Pre-cooling.

6-qt. baskets	7c. each.
9-qt. "	1 1/4c. "
11-qt. "	1 1/2c. "
15-qt. "	2 1/2c. "
One-half pear case	2 1/2c. "
Apples in boxes	4c. "
Apples in barrels	10c. "
20-lb. plum crate	2 1/2c. "
24-basket berry crate	4c. "

For Storage.

6-qt. baskets, month or less	1 1/2c. each.
9-qt. " "	2c. "
11-qt. " "	2 1/2c. "
15-qt. " "	2 1/2c. "
One-half pear case, month or less	2 1/2c. "
Berries, 24-qt. crate, month or less	4c. "
Apples, in boxes, season rate	15c. "
" " per month	5c. "
" in barrels, season rate	40c. "
" " first month	15c. "
" " each succeeding month	10c. "
Minimum charge	25c. "

Season rate on apples ends May 1.

The above rates supersede and cancel all previous rates.

RULES AND REGULATIONS.

1. The management will attend to loading, billing and sealing of cars, for which there is no extra charge except when bracing, slatting or lining of cars is necessary, when the shipper is charged with actual cost of material and time.

2. All cars, with the exception of those loaded with fruit in barrels, for western or export shipments, will be braced in the centre. The floors will be slatted when necessary. The management reserves the right to decide whether cars should be "slatted" or not. The approximate cost of slatting and bracing will be given upon application.

3. Settlement for charges according to statements rendered will be made with the Grimsby Cold Storage. Cheques should be made payable to the Department of Agriculture.

4. It will be necessary to make application in writing to the Grimsby Cold Storage, for space to pre-cool carload lots, at least twenty-four hours before the fruit is to be received at the storage. Applications for pre-cooling space will be accepted in order of priority. Reservations for pre-cooling space not used will be charged for at the rate of \$12 per car, unless said reservations are cancelled at least twenty-four hours before date reserved for.

5. Fruit will be received *between 8 a.m. and 12.30 p.m. and between 1 p.m. and 6 p.m.* on all week days excepting Saturday, when closing time is 5.30 p.m.

6. *Shipments of warm fruit will not be made with pre-cooled fruit*, as this is conducive to bad results. All warm fruit for pre-cooled shipments must be brought to the plant the day before shipment.

7. Shipping orders must be in the hands of the manager by noon of the day of shipment, otherwise shipment is not guaranteed for that day.

8. It requires but twenty-four hours or less to pre-cool a car of fruit. *If fruit is not shipped within twenty-four hours from the time of receiving, storage rates automatically go into effect on that parcel of fruit*, in place of the charge for pre-cooling.¹

9. It is not advisable to hold tender fruits in cold storage for a period longer than four days prior to shipment to the Northwest. To prevent unjust discrimination against "pre-cooled fruits" or other false impressions that may arise in the fruit trade from such faulty harvesting and shipping methods as over-ripeness at picking time, injuries from handling, poor packing, delay in shipping, etc., the Department of Agriculture reserves the right to notify consignee of the condition of the fruit at the time of shipment.

10. The Department of Agriculture will be responsible only for the *number* of packages received *when the shipper's name is marked or stamped upon each package*. Grades and varieties of fruit will be kept separate as far as possible when the packages bear distinguishing marks.

11. Growers bringing fruit to the plant for a shipper will be given a receipt for the lot, a duplicate will be sent to the shipper and a triplicate filed in the office of the Cold Storage, from which a daily balance sheet will be made for the convenience of shippers assembling cars from storage stock.

12. Shippers will be furnished with a tally sheet of each carload shipment and will sign a receipt for all fruit shipped from the plant.

NOTES.

The Cold Storage of Apples.

Apples should be placed in cold storage when well matured, but still hard. This means that winter apples must not be soft ripe. Apples that are well coloured will, other conditions being equal, keep better in cold storage than greener ones of the same variety. Only the best quality of fruit and packs should be selected, and *fruit should be stored immediately after picking*. Apples wrapped and packed in boxes store better than those packed otherwise. Apples for storage should be handled carefully, and should be free from blemishes or skin punctures.

Cold storage space should be applied for in advance.

Apples will be stored at a temperature of 31 degrees and piled according to approximate date of removal. Different grades and varieties will be kept separate when the grades and varieties are marked on the outside. The name of the owner of the fruit must be indicated on the outside of the package.

¹ This clause does not apply to shipments of apples and pears.

Unless the owner of the fruit otherwise signifies at the time of storage, the season rate will be charged for all goods stored. The season rate will not apply in any case if goods are entered under the monthly rate.

IN CONCLUSION.

The purpose of those in charge of the Grimsby Cold Storage is not merely the refrigeration or cooling of fruit. It is rather the finding out of any means that will help the grower to place his fruit on the market in such a good condition that he will be enabled to sell more and get better returns for it. We believe the proper application of refrigeration to be one of the chief factors in doing this, but not the only one. Proper methods in grading, picking, packing and handling are even more important. The investigators employed at the Grimsby plant have had a wide horticultural experience, including box packing and wrapping, as well as the harvesting and shipping of fruit. As far as their experimental duties will permit, they are at the service of the fruit growers of the Niagara and other districts to instruct in and to demonstrate the best methods of packing and handling fruit.

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